

REMARKS

Claims 1-3 are pending in this application. By this Amendment, claim 1 is amended. The amendments introduce no new matter. Claims 4-8 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Kemmerle and Hug during the February 7, 2008 personal interview. Applicants' separate record of a summary of the substance of the personal interview is contained in the following remarks.

The Office Action, on page 2, rejects claims 1-8 under 35 U.S.C. §103(a) as being unpatentable over JP-A-2002-201082 to Ichikawa in view of U.S. Patent No. 4,354,991 to Suzuki and JP-A-61-026565 to Kani. This rejection is respectfully traversed.

Without conceding the propriety of this rejection, claim 1 is amended to include the features recited in claims 4-8. The Office Action concedes that the applied references do not teach the features recited in now-canceled claims 4-8. To cure this deficiency, the Office Action asserts that these features would have been obvious allegedly because these features would have been well known to one of ordinary skill in the art and/or would have been mere optimization. This assertion is incorrect for at least the following reasons.

As discussed during the February 7 personal interview, Applicants establish unexpected results of the combination of all of the features recited in independent claim 1. With references to Tables 1-5, Applicants disclose that the combination of features recited in claim 1 result in an unexpectedly low failure rate and reduced pressure loss.

With respect to the feature of a fire-resistant particulate body having a grain size in a range of 0.01 to 1 mm, as recited in claim 1 and now-canceled claim 5, Applicants disclose, in Table 4, values that fall within the claimed range, see examples 7 and 8, as compared to

several values that fall outside this range, see reference examples 10, 11, 12 and 13. Table 4 indicates that the failure rate increases significantly and unexpectedly outside the claimed range.

With respect to the feature of a fire-resistant block body having water absorption equal to or above 0.05% by weight, as recited in claim 1 and now-canceled claim 7, Applicants disclose, in Table 4, values that fall within the claimed range, see examples 9 and 10, as compared to examples that fall outside the claimed range, see examples 14-16. Table 5 indicates that the claimed range unexpectedly exhibits substantially less pressure loss due to increased wettability of a honeycomb structure.

With respect to the feature of separation distance from the body to be fired is equal to or below 50 cm, as recited in claim 1 and now-canceled claim 8, Applicants disclose, in Table 3, values that fall within the claimed range, see examples 5 and 6, as compared to values that fall outside the claimed range, see reference examples 7-9. Table 3 indicates that the claimed range unexpectedly exhibits substantially less pressure loss in the honeycomb structure as well.

As such, Applicants adequately rebut any alleged *prima facie* case of obviousness based on the unexpected results attributable to each of the above features.

Further, Ichikawa, Suzuki and Kani would not have been obviously combinable in the manner suggested by the Office Action. The Office Action concedes that Ichikawa does not teach the feature of the firing is performed in a protective container made of silicon carbide in which a solid containing aluminum is placed, as recited in claim 1. To cure this deficiency, the Office Action asserts that Suzuki and Kani teach these features. The Office Action summarily concludes that it would have been obvious to one of ordinary skill in the art to combine the applied references in the manner suggested by the Office Action to render

obvious the combination of features previously recited in claim 1. This assertion is also incorrect for at least the following reasons.

As discussed in the "Background" of Applicants' specification, Ichikawa teaches a porous body formed from a clay that is formed by adding metal silicon, an organic binder and an alkaline earth metal to a silicon carbide powder raw material to form the firing body. Ichikawa further teaches that sintering temperatures of 1400-1800°C are suitable and that temperatures exceeding 1800°C increase evaporation of the metal silicon (paragraph [0050]). In contrast, Suzuki teaches forming a dense ceramic structure by sintering a composition of SiC and Al₂O₃ at temperatures above 1900°C (col. 3, line 59 - col. 4, line 5). It is unreasonable to assert that one of ordinary skill in the art would have been logically commended to the teachings of Suzuki, which create a dense ceramic structure by sintering a composition of SiC and Al₂O₃ above 1900°C, to modify the method of Ichikawa, which creates a porous ceramic body by sintering a composition including SiC and metal silicon at temperatures below 1800°C, to any demonstrated predictable end.

Kani, like Suzuki, also teaches a method of forming dense silicon carbide materials with sintering carried out between 1900-2300°C. Kani states that it is difficult to sinter SiC alone, and, in order to obtain a high-density sintered body, the addition of some type of aid is essential (page 3 of English-language translation of Kani). Kani teaches sintering with an aluminum containing substance present with the firing body (see page 4, "Means for Solving the Problems" of Kani). Kani further teaches that the quantity of the aluminum outside the firing body is 0.01% or more by weight according to the firing body and that the aluminum can be in the form of a lump or powder (page 7). As with Suzuki, one of ordinary skill in the art would not have had the teachings of Kani, to create a dense ceramic structure by sintering a composition substantially comprised of SiC (>88% by weight) between 1900-2300°C, logically commended to his or her review in order to modify the method of Ichikawa, which

creates a porous ceramic body by sintering a composition including SiC and significant amounts of metal silicon (10-45% by weight) at temperatures below 1800°C, to any demonstrated predictable result.

The Office Action asserts that one of ordinary skill in the art would have been motivated to, first, modify Ichikawa to include a silicon carbide casing, as in Suzuki, and, second, further modify Ichikawa to include an Al containing material placed in the casing, as in Kani. The Office Action asserts that one of ordinary skill in the art would have been motivated to make this modification allegedly because Suzuki discloses that placing the body in a silicon carbide crucible during firing creates a desirable product without the need for hot pressing, and Kani discloses that placing an aluminum containing material in the crucible during firing produces the desired result of aluminum as a sintering aid without having the aluminum as an impurity in the final product and to create a denser, purer finished product. The attempt to combine these references to render obvious the combination of the features recited in claim 1 is not supported by the asserted motivation and can only be arrived at through improper application of hindsight reasoning based on the roadmap provided by Applicants' disclosure.

Additionally, the Office Action's asserted motivation of creating a denser product, even under the Office Action's construction, is not an objective of Ichikawa, which is directed to porous bodies. With respect to Suzuki, the Office Action's assertion that placing the body in the silicon carbide crucible during firing creates a "desirable" product without the need for hot pressing, is not relevant to the subject matter of Ichikawa, or that of the pending claims, because the desired product of Suzuki is not the desired product of Ichikawa, or even producible by the Ichikawa method. Likewise, the motivation to avoid hot pressing, in methods for producing dense ceramics, has no relevance to Ichikawa. Further, there is no rational underpinning to support the assertion that this objective, or other predictable result,

would be achieved by modifying Ichikawa in the manner suggested, with a reasonable expectation of success.

Regarding Kani, producing an end result of aluminum as a sintering aid without having aluminum as an impurity is a conclusory statement that is not directed to any identified objective, or shortfall, of Ichikawa. It is unclear why this goal would have motivated one of ordinary skill in the art to combine these references at least because, in a porous structure such as Ichikawa's, the aluminum oxide layer may advantageously reduce pressure loss by smoothing the pores.

Finally, without conceding the rejections of the Office Action, and solely to advance prosecution of this application, Applicants amend independent claim 1 to recite the firing is performed at a temperature of 1400-1800°C. Such amendment further distinguishes the subject matter recited in claim 1 over any obvious combination including Suzuki and/or Kani. As indicated above, one of ordinary skill in the art would not have looked to the teachings of these references so as to arrive at a process with the above features based at least on the higher sintering temperatures and differing objectives of these references.

During the February 7 personal interview, the Applicants' representative presented the above arguments to the Examiners. The Examiners indicated that they would take these arguments into further consideration.

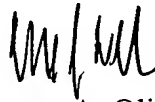
For at least the foregoing reasons, the applied references are not combinable in the manner suggested by the Office Action and cannot reasonably be considered to have suggested the combinations of all of the features positively recited in independent claim 1. Additionally, claims 2 and 3 are also not taught, nor would they have been suggested, by the applied references for at least the respective dependence of these claims, directly or indirectly, on an allowable base claim, as well as for the separately patentable subject matter that each of these claims recites.

Accordingly, reconsideration and withdrawal of the rejections of claims 1-3 under 35 U.S.C. §103(a) being unpatentable over the applied references are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-3 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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